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regular laws of change, ought to be omitted. A few examples will illustrate the defects of the book in this respect. On page 165 under a root "*μακ, be great, have power,*" are given, among others, these words: *μακ-ρός, μάκ-αρ, μῆκ-ος, μηχ-ανή, μέγ-ας*, and English "*make, may, might, much, more, most, many, main, maid.*" Now there are grouped together here representatives of at least five different roots. First: *μακρός* with *μήκος* is not related to any of the others given and to none of the English words. (English *meager* may be a cognate). Second: not related to *✓μακ*, but forming a group by themselves are *μέγας, much, more, most.* Third: Another group is made up of *μηχανή, may, might, main.* Fourth: English *many* and *make* are not related to *✓μακ* nor to each other, and English *maid* is at least problematical. Again on page 186, under "*root πιθ, bind,*" besides the Greek and Latin words which properly belong there, are placed English "*bind, bond, band, bundle,*" which, of course, belong together, but have nothing to do with *✓πιθ*, and also English "*body and bed*" which are not related to the other words nor to each other. Other examples of inaccurate grouping are found on pages 211, 223, 262 (this is particularly bad), and 278. There are also in one or two places some unscientific explanations of form-change.

After adding that the lack of a table of contents and of an index seems to impair the usefulness of the book for ready reference, the possible fault-finding has been done. What is open to criticism is small in amount compared with what is good, and the book can be heartily recommended to teachers who wish to follow the method it represents.

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Nature Study for Common Schools. By WILBUR S. JACKMAN, Teacher of Natural Science, Cook County Normal School, Chicago, Ill.; second edition revised. pp. 448. Henry Holt & Co.

Jackman's *Nature Study* is a manual for the trainers of children's minds rather than a treatise on the natural sciences. As an effort to make the study of science in our schools not only a training in observation and reasoning but also an inspiration toward further investigation, it should have the commendation of all who have begun to doubt the benefits derived from cramming the elementary facts of a science in order to remember seventy-five per cent. of them at a fixed and final hour. The book consists of a few introductory chapters upon the principles and methods of nature study, followed by a series of lessons, almost entirely in the form of questions, in zoology, botany, physics, chemistry, geography, geology and mineralogy.

The old lineal arrangement of the sciences is thought to confuse

their true relation and to develop children unsymmetrically ; so its annihilation is sought by introducing them together. In the development of each individual branch of science, little or no attention is given to the systematic arrangement of the subject, the work being adapted to the seasons, or the natural inclination of the child. The questions are in nine parts, corresponding to the nine months of the school year, each month having its work in each of the seven sciences.

"The normal child himself will tell by his actions what things appeal earliest and most strongly to him, and will thus indicate to the teacher the lines along which it is best to guide him. The time has come for the teachers when 'a little child shall lead them.'"

The teacher gives out the work, selects the methods of expression, and gives any help or suggestions which are necessary to the full understanding of the topic. The pupils observe nature, make collections, perform experiments, and they must express the knowledge thus gained, not by words alone but also by painting, drawing, modeling or "making." They may, besides, have some reference reading to do. The character of the information brought out is of course not profound. Children's observations are naturally "all breadth and no depth," and the author follows nature.

The questions are fresh, interesting, and suggestive. In zoology and botany the life history of animals and plants is studied instead of analysis and classification, since "children are most deeply interested in objects through their functions." Physiology is treated under zoology. The following is a sample of how the author teaches rational hygiene. The skin is oiled—[by glands at the base of each hair]—and thus kept smooth and supple—cold water hardens oil—cold and water cause chapped skin—oil is a remedy for chapped hands. All this is developed by questions, except that in parenthesis. Physics offers a wide field for observation—many phenomena are studied in all of its departments ; but the theories of light, heat, and the molecular nature of matter are untouched. Molecules and atoms are not mentioned in chemistry either, which is confined to familiarizing the pupils with a few common elements. In meteorology and astronomy, along with the rest of the work, careful records are kept of the meteorological and astronomical changes. The geography is almost entirely physical, and especially seeks to teach the relation between the natural conditions and the products of different localities. The division lines of the sciences are not emphasized, but their connection constantly revealed.

Though the general idea of Mr. Jackman's book is excellent, some of its features are certainly open to discussion. After making due allowance for the mind-training object of the study, the distortion which a science, as systematized knowledge, has to undergo, to be studied according to the seasons and the spontaneous inclinations of a supposably typical child's mind, might

overbalance the advantages gained. Pupils can hardly get any conception of the subject as a whole, or the relation of its parts, when their knowledge comes so haphazard; the aid to memory which system gives is lost. In physics, the first lesson is on the refraction of light and magnetism. These subjects interest children to be sure, but most children take a laudable satisfaction in taking up a subject in a logical, systematic way, though this may not be their own way.

"All breadth and no depth" may do very well for training observation, if the superficiality does not lead to wrong deductions. It is not depth but complexity, which bothers a child. Because self-observation is good, telling children what they cannot find out themselves will not necessarily lead to credulity, and may prevent shallow intellectual egotism. It is the teacher's task, by analogies and everything available, to make the difficult easy and the obscure plain.

Since a common school study of science is often the only study of it which our future citizen has, it is incumbent upon a course to teach them certain important facts as well as to train their faculties. The discussion of digestion and the organs concerned is an example of the omissions by the author, while a vast amount of unimportant information is being considered.

If these are weak points in Mr. Jackman's book, they do not vitiate its strong points. Mr. Jackman's scientific methods of training the pupils to observe, observe, observe, everywhere and anywhere, could be used with a more systematic arrangement of matter; and by increasing the information given by the teacher a more thorough and profound knowledge would be inculcated. In whatever way this book is used it can hardly fail to be of great value to any elementary science teacher by way of inspiration and suggestion.

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Let Him First be a Man. By W. H. VENABLE, LL.D. Lee & Shepard. pp. 274.

"The wish to be of some service—even the slightest—to the vital cause of popular education:" this the author of the collection of essays with the above title states in his preface was the incentive to his work. The several essays treat of many topics connected with the teacher, the art of teaching, and the proper aim of popular education. Not the least suggestive of the wise and graceful thoughts, which flow from Dr. Venable's pen like a rill of Pieria, are addressed to the teacher. "The making of a child into a complete MAN is a process requiring time, skill, science, and wisdom." The plea of Rousseau for the youth undergoing his training: "Let him first be a man," echoes through this charming volume. "The whole object of the teacher should